REMARKS

Status of Claims

Claims 19-36, 40, and 42 remain pending in this case.

Claims 1-18, 37, and 39 are cancelled due to a restriction by the PTO.

Claims 38 and 41 were previously cancelled before the restriction by the PTO.

Claims 43-60 are added as new claims. Claims 43-60 are method claims that track original claims 19-36, respectively, and thus a new search is not required. Claims 43-60 are directed to a method of determining the dispensing efficiency of a dispensing point on a fuel dispenser, and thus claims 43-60 are directed to the same elected species as claimed in claims 19-36. Thus, the addition of claims 43-60 does not violate the restriction requirement in this case made by the PTO.

Rejection of Claims 19-20, 26-33, 40, and 42 Under 35 U.S.C. § 103 – McSpadden & Hart

The PTO rejected claims 19-20, 26-33, 40, and 42 under 35 U.S.C. § 103 as being unpatentable over U.S. Patent No. 5,871,651 to McSpadden (hereinafter "McSpadden") in view of U.S. Patent Application Publication No. 2001/0039978 to Hart (hereinafter "Hart").

Claims 43-60 are added method claims that track original claims 19-36, respectively, and thus these claims are patentable for the same reasons as the rejected claims 19-20 and 26-33, as discussed below.

McSpadden

McSpadden is directed to a system that detects differences in flow rates between dispensing "cycles" to determine when a filter is clogged such that performance degrades. The "cycle" may be a period of time or a defined volume that includes more than one dispensing transaction, and in one embodiment is 10,000 gallons (col. 1, lines 54-56). A maximum flow rate is determined for consecutive cycles. The maximum flow rate for the two cycles are then compared, and if the maximum flow rate for the current cycle is less than the previous cycle by more than a threshold value, a filter status indicator is set indicating that a filter may be clogged and that a filter change is needed. (col. 1, line 62 - col. 2, line 14).

McSpadden does not determine the flow rate for a cycle by dividing the volume of fuel dispensed over the cycle by time of the cycle. Instead, McSpadden calculates multiple flow rates for small discrete periods of time during a dispensing transaction by dividing volume by time during such multiple discrete times. Multiple discrete periods of time form a fueling transaction, and multiple dispensing transactions form a cycle. In one embodiment, the flow rate is calculated for every 250 ms during a dispensing transaction (col. 1, lines 33-42).

The flow rate for the discrete period of time during a fueling transaction is then compared to a maximum flow rate stored in memory. If the flow rate just calculated is greater than an already stored maximum flow rate, the flow rate just calculated replaces the stored maximum flow rate. (col. 1, lines 41-48). Thus, at the end of the cycle, the maximum flow rate for a given period of time during one fueling transaction that occurred in such cycle is known, but no other flow rate data is retained (See, also Figures 3A-3D). <u>Thus, only a "peak" flow rate during one period of a dispensing transaction is determined in McSpadden</u>.

The maximum flow rate stored for a cycle is thus recorded, then the process is repeated for a new cycle, and the maximum flow rate for the new cycle is recorded. The maximum flow rate for the two cycles are compared, and if the maximum flow rate for the second cycle is less than the first cycle by more than a threshold value, a filter status indicator is set indicating a filter change is needed. (col. 1, line 62 - col. 2, line 14).

Thus, McSpadden does not store volume and time pair measurements for a plurality of dispensing times or events, but rather only stores the single volume and time pair with the maximum value or maximum flow rate for a given cycle. Thus, no averaging, curve fitting or statistical method is used to determine the maximum flow rate of a dispensing point since the maximum flow rate is only based on one maximum measurement. Thus, any error in the calculated maximum flow rate during a discrete period of time could cause the maximum flow rate to be incorrect and not be eliminated as an error point or reduced in importance with other calculated flow rates.

<u>Claims 19-36 and 43-60</u>

Claim 19 is the independent claim among claims 19-36, and claim 43 is the independent claim among added claims 43-60, which track claims 19-36, respectfully. Thus, if claims 19 and 43 are patentable, claims 20-36 and 44-60 are patentable.

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"maximum dispensing efficiency curve"

First, claim 19 requires that a control system "determine a maximum dispensing efficiency curve from said plurality of volume and time pair measurements." The PTO provides that McSpadden teaches this limitation. However, this limitation is not taught or suggested by McSpadden or Hart, and thus an obviousness rejection cannot stand. MPEP § 2143.03.

The present application defines the "maximum dispensing efficiency curve" as a "line that crosses through the subset of volume and time pair measurements from the plurality of volume and time pair measurements that represents dispensing events having sustained peak flow rates and minimum dead time." (Specification, ¶ 0059). When evaluating a reference or combination of references to determine if it teaches or suggests a claim element, the PTO is normally entitled to give the claim terms their broadest reasonable interpretation. However, this leniency is circumscribed when the Applicant has provided a definition for a claim term, in which case the Applicant's definition supplants the otherwise allowable broad reasonable interpretation. *In re Zletz*, 893 F.2d 319, 321 (Fed. Cir. 1989); MPEP § 2111.01.

McSpadden does not store a plurality of volume and time pair measurements for a single dispensing event or a plurality of dispensing events. Rather, McSpadden only stores a single flow rate measurement during a cycle, and only the greatest or maximum flow rate calculated during a cycle. Thus, McSpadden does not and cannot determine a "line through a subset of volume and time pair measurements" or any kind of curve relating to volume and time measurements or flow rates, since there is not a subset of volume and time pair measurements stored by McSpadden.

Further, the system of McSpadden cannot determine dispensing events "having sustained peak flow rates and minimum dead time" as required to be determinable from the "maximum dispensing efficiency curve." The single maximum flow rate stored by McSpadden for a cycle only tells what the maximum flow rate was for a discrete period of time, 250 ms in the preferred embodiment, during an unknown plurality of dispensing events. Further, McSpadden cannot determine which dispensing events had sustained peak flow rates since the flow rate calculation is only for a discrete period of time during a single dispensing event.

McSpadden cannot also determine the "dead time" from a single maximum flow rate, because no dispensing efficiency curve is determined and thus the projected intersection of a curve fitted through the plurality of dispensing events with sustained peak flow rates and

minimum dead time or equivalent technique can be performed. The "dead time" is the amount of time that a dispenser is activated and ready for dispensing, but no fuel flow is occurring. For example, a customer may not activate a nozzle handle to initiate fuel flow immediately after a dispenser is activated. The customer may take time to insert the nozzle into the vehicle, select a fuel grade. The "dead time" may also includes any excess time during and after fueling when no fuel flows for various reasons. As such, "dead time" is wasted time from the standpoint of gas station throughput and efficiency and profits.

For this reason alone, claims 19-36 are patentable over the combination of McSpadden and Hart.

"maximum dispensing efficiency"

Because McSpadden does not determine a "maximum dispensing efficiency curve," it cannot determine a "maximum dispensing efficiency of said dispensing point by determining a slope of said maximum dispensing efficiency curve." The PTO references Figure 3 of Hart and states that it teaches "using a slope to determine a maximum dispensing efficiency curve" (p. 5), but Hart only discloses in Figure 3 a chart that can be used to convert vapor flow leaks based on ullage pressure.

Claims 40, 42

Claim 40 is the independent claim among claims 40 and 42. Thus, if claim 40 is patentable, claim 42 is patentable.

As discussed above, McSpadden does not disclose determining any curve based on a plurality of volume and time pair measurements as required by claims 40 and 42. Because McSpadden does not disclose determining such a curve, the combination of McSpadden and Hart does not teach or suggest determining the "dispensing efficiency" as required by claims 40 and 42.

Further, neither McSpadden nor Hart disclose determining the "dead time" of a dispensing point from the dispensing efficiency as required by claims 40 and 42. McSpadden only discloses determining a single maximum flow rate, and cannot determine the dead time by using a plurality of volume and time pair measurements, since there is no curve that can be projected to an axis, for example, to determine the dead time.

Respectfully submitted,

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